DOCUMENT RESUME

ED 223 723 TM 820 871

| | |
|---|---|
| TITLE | Development of USES Specific Aptitude Test Battery for Respiratory Therapist (medical ser.) 079.361-010. |
| SPONS AGENCY | Employment and Training Administration (DOL), Washington, D.C. |
| REPORT NO | S-326R82 |
| PUB DATE | 82 |
| NOTE | 22p.; Appendix 3 marginally legible due to small print. Analysis and report by Northern Test Development Field Center, Detroit, Michigan. |
| PUB TYPE | Reports - Descriptive (141) -- Reports - Research/Technical (143) |
| EDRS PRICE | MF01/PC01 Plus Postage. |
| DESCRIPTORS | *Aptitude Tests; Employment Qualifications; *Inhalation Therapists; Job Analysis; *Occupational Tests; Personnel Evaluation; *Test Construction; Test Validity; *Vocational Aptitude |
| IDENTIFIERS | Test Batteries; USES Specific Aptitude Test Battery |

ABSTRACT

A Specific Aptitude Test Battery (SATB) for Respiratory Therapist was developed by the U.S. Employment Service (USES). The technical adequacy of research, fairness to minorities, and usefulness of the battery to Employment Service staff and employers in selecting individuals for training in respiratory therapist positions were examined. Research demonstrated a statistically significant and useful relationship between proficiency as respiratory therapists and SATB aptitudes of general learning ability, spatial aptitude, form perception, and motor coordination. The validation sample consisted of 496 employed workers (including 99 blacks) from 17 states and the District of Columbia. The SATB was found to be fair to Blacks, Hispanics, and non-minorities and to males and females, using several definitions of fairness. Job performance data were collected during 1972-81 using supervisory ratings. The job analysis procedure, experimental General Aptitude Test Battery (GATB), validation sample description, and criterion-related validity for the study are explored. A sample Descriptive Rating Scale and respiratory analyst job description are included. Work performed includes record keeping, therapy procedures, equipment care, and other duties. (CM)

**********
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
**********

# Respiratory Therapist (medical ser.) 079.361-010

Development of USES Specific Aptitude Test Battery S-326R82

U.S. Department of Labor
Employment and Training Administration
U.S. Employment Service
1982

ED2237723

U.S. DEPARTMENT OF EDUCATION
NATIONAL INSTITUTE OF EDUCATION
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

X This document has been reproduced as received from the person or organization originating it.
Minor changes have been made to improve reproduction quality.

• Points of view or opinions stated in this document do not necessarily represent official NIE position or policy.

TM 820 871

# DEVELOPMENT OF USES SPECIFIC APTITUDE TEST BATTERY

for

RESPIRATORY THERAPIST (medical ser.) 079.361-010

S-326R82

Developed in cooperation with the Alabama, California, District of Columbia, Florida, Illinois, Indiana, Louisiana, Michigan, Minnesota, Missouri, Nebraska, New Jersey, New Mexico, New York, Ohio, Oklahoma, Oregon and Texas State (or District) Employment Services

Analysis and Report

by

Northern Test Development Field Center

Detroit, Michigan

U.S. DEPARTMENT OF LABOR

Employment and Training Administration
United States Employment Service

1982

ACKNOWLEDGMENT

The United States Department of Labor and affiliated State Employment Service Agencies express their sincere gratitude to the following organizations for cooperating in this research.

North

Arnot Ogden Memorial Hospital, Elmira, New York
Bellevue Hospital, New York, New York
Bryan Memorial Hospital, Lincoln, Nebraska
Detroit Osteopathic Hospital, Highland Park, Michigan
Edgewater Hospital, Chicago, Illinois
Good Samaritan Hospital, West Islip, New York
Henry Ford Hospital, Detroit, Michigan
Horton Memorial Hospital, Middletown, New York
The Jewish Hospital, St. Louis, Missouri
Kettering Medical Center, Dayton, Ohio
Mercy Medical Center, Springfield, Ohio
Methodist Hospital of Indiana, Indianapolis, Indiana
Michael Reese Hospital, Chicago, Illinois
Montefiore Hospital, Bronx, New York
Mount Carmel Mercy Hospital, Detroit, Michigan
Mount Sinai Hospital, Minneapolis, Minnesota
Northern Westchester Hospital Center, Mt. Kisco, New York
Pontiac General Hospital, Pontiac, Michigan
Saint Alexis Hospital, Cleveland, Ohio
Saint Luke's Hospital, Newburgh, New York
Saint Paul Ramsey Hospital, St. Paul, Minnesota
Saint Vincent Hospital, Indianapolis, Indiana
Somerset Medical Center, Somerville, New Jersey
Strong Memorial Hospital, Rochester, New York
University of Minnesota Hospitals, Minneapolis, Minnesota
Upstate Medical Center, Syracuse, New York
Weiss Memorial Hospital, Chicago, Illinois

South

Arlington Memorial Hospital, Arlington, Texas
Greater Southeast Community Hospital, Washington, D.C.
Midwest City Memorial Hospital, Midwest City, Oklahoma
Our Lady of Lourdes Hospital, Lafayette, Louisiana
Providence Hospital, Mobile, Alabama
Saint John's Hospital, Tulsa, Oklahoma
San Antonio State Chest Hospital, San Antonio, Texas
University Hospital, Jacksonville, Florida
Washington Hospital Center, Washington, D.C.

West

Daniel Freeman Hospital, Inglewood, California
Emanuel Hospital, Portland, Oregon
Glendale Adventist Hospital, Glendale, California
Harbor General Hospital, Torrance, California
Huntington Memorial Hospital, Pasadena, California
Lovelace-Bataan Medical Center, Albuquerque, New Mexico
Presbyterian Hospital, Albuquerque, New Mexico
Rancho Los Amigos Hospital, Downey, California
Saint John's Hospital, Santa Monica, California
Saint Joseph Hospital Medical Center, Burbank, California
Santa Monica Hospital Medical Center, Santa Monica, California
UCLA Medical Center, Westwood, California
University Heights Hospital, Albuquerque, New Mexico
Valley Presbyterian Hospital, Van Nuys, California
White Memorial Medical Center, Los Angeles, California

TABLE OF CONTENTS


| | PAGE |
|---|---|
| ACKNOWLEDGMENT | ii |
| SUMMARY | 1 |
| PROCEDURE | 2 |
| Job Analysis | 2 |
| Experimental Test Battery | 3 |
| Validation Sample Description | 3 |
| Criteria for Validation Study | 4 |
| ANALYSIS | 6 |
| VALIDITY OF THE BATTERY | 8 |
| Criterion Related Validity | 8 |
| Effectiveness of the Battery | 8 |
| Subgroup Analysis | 9 |
| Cross-validation Sample | 10 |
| Prior Battery | 10 |
| APPENDIX 1 | |
| Descriptive Statistics for Black, Nonminority and Hispanic Subgroups | 11 |
| APPENDIX 2 | |
| Descriptive Statistics for Males and Females | 13 |
| APPENDIX 3 | |
| Descriptive Rating Scale for Validation Sample | 15 |
| APPENDIX 4 | |
| Job Description | 19 |

GATB Study No. 3070

# DEVELOPMENT OF USES SPECIFIC APTITUDE TEST BATTERY S-326R82

for

RESPIRATORY THERAPIST (medical ser.) 079.361-010

## SUMMARY

This report is designed to provide the information required to evaluate the Specific Aptitude Test Battery (SATB) for Respiratory Therapist from three points of view: (1) technical adequacy of the research; (2) fairness to minorities; and (3) usefulness of the battery to Employment Service staff and employers in selecting individuals for training in Respiratory Therapist positions.

Research demonstrated a statistically significant and useful relationship between proficiency as Respiratory Therapists and the following Specific Aptitude Test Battery:

| Aptitudes | Cutting Scores |
|---|---|
| G - General Learning Ability | 75 |
| S - Spatial Aptitude | 75 |
| P - Form Perception | 95 |
| K - Motor Coordination | 95 |

The validation sample, on which the SATB was developed, consisted of 496 employed workers (including 99 blacks) from 17 states and the District of Columbia. Data were collected during 1972-1981. The tests used were those of the General Aptitude Test Battery (GATB). Job proficiency was measured by supervisory ratings.

No evidence of differences in validity between blacks and nonminorities or Hispanics and nonminorities was found. The SATB was found to be fair to blacks, Hispanics and nonminorities using several definitions of fairness. Additional information is presented in the Validity of the Battery section and in Appendix 1.

No evidence of differences in validity for males and females was found. The battery was found to be fair to males and females using several definitions of fairness. Additional information may be found in the Validity of the Battery section and in Appendix 2.

The SATB can be expected to produce a useful increase in the proportion of highly proficient workers. When the SATB was applied to the validation sample, composed of individuals who were employed and therefore considered competent, an increase from 68% to 74% in the proportion of highly proficient workers was found. A greater increase can be expected when the battery is used with applicants, as the range of relevant abilities is wider among applicants than among employed workers.

## PROCEDURE

A concurrent design was used (test and criterion data were collected at about the same time). Data for the validation sample were collected during 1972-1981.

### Job Analysis

A job analysis was performed by observing the Respiratory Therapists' performance on the job and by consulting with the Respiratory Therapists' supervisors. On the basis of the job analysis, a job description was prepared which was used to select an experimental sample of Respiratory Therapists who were performing those job duties and choose an appropriate criterion or measure of job performance.

At each location listed under ACKNOWLEDGMENT, the job duties were compared with the job description and found to be essentially the same. If minor differences were found, the job description was modified. The job description shown in Appendix 4 is the result of this process and may be used to provide information on the applicability of the test battery resulting from this research.

In the job analysis, each job duty was rated for frequency of performance, percentage of time spent, and level of difficulty. Critical job duties were identified on the basis of these ratings.

At each location at least one analyst rated the aptitudes as irrelevant, important or critical to the performance of the job duties. A synthesis of these ratings and their rationale follows:

| | |
|---|---|
| G - General Learning Ability | Required to understand and apply principles and techniques of respiratory therapy; to make independent judgments while administering therapy; to be alert to and respond appropriately to adverse effects of treatments; to comprehend and clarify written and verbal instructions; to operate complex equipment correctly and safely in accordance with prescribed procedures; to deal with any emergencies; and to check and repair equipment. |

| | |
|---|---|
| V - Verbal Aptitude | Required to understand oral and written instructions; to communicate effectively with doctors, patients and their families; to record on patients' record all pertinent information, including physiological reactions to therapy; and to read and comprehend technical literature. |
| P - Form Perception | Required to assemble, operate, check and repair equipment; to inspect equipment to ensure it is working properly; to manipulate controls in order for patient to receive proper amounts of medication, gas flows and pressure; to observe patient closely for side effects; to control, monitor and maintain patients on continuous ventilation and other equipment; to perform arterial cannulization; to perform blood gas analysis; and to measure prescribed dosage of medication. |
| Q - Clerical Perception | Required to secure necessary information for billing patients; to check doctor's orders; to record correctly all information on medical record and on kardex card; and to record all checks and calibrations on equipment. |
| M - Manual Dexterity | Required to move hands and wrists to set up, assemble and adjust machines; to provide treatment to patients to restore and/or maintain respiratory functions as prescribed by physicians; to grasp and replace defective parts of equipment; to remove equipment not being used; to administer chest physiotherapy; and to position patients. |

## Experimental Test Battery

The experimental test battery consisted of all 12 tests of the GATB, B-1002B. Information on the composition and developmental research of the GATB may be found in the Manual for the General Aptitude Test Battery, Section III, Development, available from the Government Printing Office.

## Validation Sample Description

The validation sample consisted of 496 Respiratory Therapists (271 females and 225 males) employed in hospitals and medical centers in the North, South and West (see ACKNOWLEDGMENT). A total of 164 were minority group members (99 blacks, 34 Hispanics, 26 Orientals, 3 French Canadians, and 2 American Indians) and 332 were nonminority group members. The means and standard deviations for age, education and experience of sample members are shown in Table 1.

Two employers participating in the research used tests in their selection process. The California Achievement Test, used to measure English and math skills, was given by one employer. The second employer used a test whose content was similar to an exam given by a national board to become a Registered Respiratory Therapist.

All Respiratory Therapists had at least 1 month experience on a job which has duties similar to those found in the job description in Appendix 4. Descriptive statistics for black, nonminority, and Hispanic subgroups are shown in Appendix 1.

## Criterion for Validation Study

The criterion for the validation sample consisted of supervisory ratings. The immediate supervisor rated each worker. The ratings were obtained by means of personal visits by state test development analysts who explained the rating procedure to the supervisors. Two ratings were obtained from each supervisor with an interval of at least two weeks between the ratings. Since sample members' test scores are confidential, supervisors had no knowledge of the test scores of workers.

A descriptive rating scale was used. The scale (see Appendix 3) consists of six items. Five of these items cover different aspects of job performance. The sixth item is a global item on the Respiratory Therapists' "all-around" ability. Each item has five alternative responses corresponding to different degrees of job proficiency. For the purpose of scoring the items, weights of 1 to 5 were assigned to the responses. The total score on the rating scale is the sum of the weights for the six items. The possible range for each rating is 6-30.

A review of the job description indicated that the subjects covered by the rating scale were directly related to important aspects of job performance. A summary of these relationships follows:

A - Quantity of Work: A Respiratory Therapist must work quickly and efficiently to make timely manipulations of valves, levers, and other control devices.

B - Quality of Work: The work of a Respiratory Therapist must be of high quality to insure that the use of equipment and administration of medication meet strict specifications established by the doctor.

C - Accuracy of Work: The work of a Respiratory Therapist must be precise in the measure of many process variables in order to prevent administration of improper (and possibly dangerous) treatment to patients.

D - Job Knowledge: The work of a Respiratory Therapist requires the acquisition of knowledge of the human respiratory process and the treatment of its dysfunctions.

E - Job Versatility: The work of a Respiratory Therapist requires the capacity to perform a variety of duties involved in the safe and effective administration of various types of respiratory therapy.

F - "All-around" Job Ability: A Respiratory Therapist's value to the employer involves a combination of the aspects of job performance listed above.

A reliability coefficient of .84 was obtained between the initial ratings and the reratings, indicating a significant relationship. Therefore, the final criterion score consists of the combined scores of the two ratings. The possible range for the final criterion is 12-60. The actual range is 19-60. The mean is 44.3 with a standard deviation of 7.8. The relationship between the criterion and age, education and experience is shown in Table 1, below.

Table 1

Means, Standard Deviations (SD) and Pearson Product-Moment Correlations with the Criterion (r) for Age, Education and Experience

| | Mean | SD | r |
|---|---|---|---|
| Age (years) | 29.6 | 8.1 | -.23 |
| Education (years) | 14.3 | 1.6 | .20** |
| Total Experience (months) | 53.1 | 42.1 | -.04 |

**Significant at the .01 level

For the purpose of analysis, the criterion distribution was dichotomized so as to include, as nearly possible, one-third of the sample in the low criterion group and two-thirds in the high criterion group. This is the standard procedure for SATB studies. The criterion cutting score was set at 41 which placed 32% in the low criterion group and 68% in the high criterion group.

## ANALYSIS

The intitial step in the analysis is to identify those aptitudes which show some evidence of validity and job relatedness. This evidence can be:

1. Statistical evidence of the correlation (r) between the test and the criterion.

2. Content validity as evidenced by a rating of "critical" based on the job analysis, or

3. Any combination of the following:

   high mean

   low standard deviation (SD)

   rating of "important" based on the job analysis.

Statistical results for the validation sample are shown in Table 2.

TABLE 2

Statistical Results for Validation Sample
N=496

| Aptitude | Mean | SD | r |
|---|---|---|---|
| G - General Learning Ability | 105.6 | 17.5 | .30** |
| V - Verbal Aptitude | 106.6 | 15.8 | .23** |
| N - Numerical Aptitude | 103.1 | 17.2 | .29** |
| S - Spatial Aptitude | 105.7 | 18.6 | .14** |
| P - Form Perception | 113.8 | 19.8 | .22** |
| Q - Clerical Perception | 117.0 | 16.6 | .17** |
| K - Motor Coordination | 113.1 | 16.2 | .14** |
| F - Finger Dexterity | 100.9 | 19.1 | .15** |
| M - Manual Dexterity | 109.6 | 18.9 | .19** |

**Significant at the .01 level

Table 3 summarizes the qualitative analysis and statistical results shown in Table 2 and shows the aptitudes considered for inclusion in the battery.

TABLE 3

Summary of Qualitative and Quantitative Data for Validation Sample

| | Aptitudes | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Type of Evidence | G | V | N | S | P | Q | K | F | M |
| Job Analysis Ratings | | | | | | | | | |
| Critical | | | | | | | | | |
| Important | X | X | | | X | X | | | X |
| Irrelevant | | | | | | | | | |
| Statistical Evidence | | | | | | | | | |
| High Mean | | | | | X | X | X | | |
| Low SD | | | | | | | | | |
| Significant r | X | X | X | X | X | X | X | X | X |
| Aptitudes Considered for Inclusion in the Battery | X | X | X | X | X | X | X | X | X |

The information in Table 3 indicates that all nine aptitudes should be considered for inclusion in the battery. The objective is to develop a battery of 2, 3 or 4 aptitudes with cutting scores at the point where (a) about the same percent will meet the cutting scores as the percent placed in the high criterion group and (b) which will maximize the relationship between the battery and the criterion.

The cutting scores are set at about one standard deviation below the mean aptitude scores of the sample, with the deviations at five point intervals above and below these points to achieve the objectives indicated above.

The selected battery is:

| Aptitudes | Cutting Scores |
|---|---|
| G - General Learning Ability | 75 |
| S - Spatial Aptitude | 75 |
| P - Form Perception | 95 |
| K - Motor Coordination | 95 |

Although Aptitudes S and K do not appear in the qualitative analysis, they are not contraindicated on the basis of the job description. Tasks requiring spatial aptitude and motor coordination are clearly stated in the job description.

## VALIDITY OF THE BATTERY

This section of the report first presents evidence of criterion related validity of the SATB on the validation sample and all relevant subsamples. Next, it provides information on effectiveness and fairness of test norms.

### Criterion Related Validity

Table 4 shows that there is a significant relationship between the job performance criterion and the SATB for the total validation sample, blacks, Hispanics, nonminorities, females and males.

TABLE 4
Validity of Battery

| Sample | N | High Criterion Group | | Low Criterion Group | | Chi Square | Significance Level p/2< | Phi Coefficient |
|---|---|---|---|---|---|---|---|---|
| | | Below Cutting Scores | Meeting Cutting Scores | Below Cutting Scores | Meeting Cutting Scores | | | |
| Total | 496 | 60 | 275 | 66 | 95 | 30.6 | .0005 | .25 |
| Black | 99 | 22 | 36 | 29 | 12 | 10.3 | .005 | .32 |
| Hispanic | 34 | 2 | 19 | 7 | 6 | 6.0* | .005** | .42 |
| Non-minority | 332 | 34 | 203 | 27 | 68 | 9.0 | .005 | .16 |
| Male | 225 | 27 | 132 | 30 | 36 | 20.0 | .0005 | .30 |
| Female | 271 | 33 | 143 | 36 | 59 | 11.9 | .0005 | .21 |

*Yates' corrected
**Computed using Fisher's Exact Probability Test

Multiple regression analysis was conducted between aptitudes G, S, P and K and the criterion. A multiple correlation of .33 (significant at the .01 level) was obtained.

### Effectiveness of the Battery

The level of validity shown in Table 4 indicates it will be useful in selection. In the total validation sample, 68% were considered to be highly competent. Of those who met the cutting scores, 74% were highly competent, which is an increase of 6 percentage points over the existing selection method. These findings are shown in Table 5.

TABLE 5

Effectiveness of the Battery

| SELECTION SYSTEM | NUMBER SELECTED | COMPETENT (HIGH CRITERION GROUP) | | MARGINAL (LOW CRITERION GROUP) | |
|---|---|---|---|---|---|
| | | N | % | N | % |
| Validation Sample | | | | | |
| Without Tests | 496 | 335 | 68 | 161 | 32 |
| With Tests | 370 | 275 | 74 | 95 | 26 |

The research sample consisted of employed workers on whom some selection had already taken place; presumably those workers who lacked the required abilities had quit, been fired, or had been transferred. Therefore, a greater increase over existing selection methods in the proportion of competent workers is to be expected when the battery is used for selection, as the range of relevant abilities is almost certainly greater among applicants than among employed workers.

Subgroup Analysis

No differential validity for this battery was found. The differences between the phi coefficients for minority and nonminority groups are not statistically significant (black - nonminority, CR=1.46; Hispanic - nonminority, CR=1.50).

The battery is fair to blacks, Hispanics and nonminorities since the proportion of each who met the cutting scores approximated the proportion who were in the high criterion group; 48% of the blacks met the cutting scores and 59% were in the high criterion group; 74% of the Hispanics met the cutting scores and 62% were in the high criterion group; 82% of the nonminorities met the cutting scores and 71% were in the high criterion group.

No difference in the validities for males and females was found for this battery; the difference between the phi coefficients for the male and female subgroups was not statistically significant (CR=-1.04).

The battery is fair to females since the proportion of females who met the cutting scores approximated the proportion who were in the high criterion group; 75% of the females met the cutting scores and 65% were in the high criterion group.

Cross-Validation Sample

A second sample of 81 Respiratory Therapists, for whom test and criterion data were collected in 1962-1963, supported the SATB. The same experimental tests were used; the criterion, or measurement of job proficiency, consisted of supervisory ratings. The phi coefficient for the sample of 81 approaches significance (phi = .14, significant at the .06 level). While the significance level of the SATB norms on the second sample did not reach the .05 level, the difference between the validities for the two samples is not statistically significant (C.R. = .90).

Prior Battery

The previously validated norms for Respiratory Therapist, S-326, were tested on this validation sample. The original battery, validated in 1966, is V-100, S-85 and Q-90. This battery is valid for the total validation sample (Phi=.22, significant at the .05 level).

APPENDIX 1

Descriptive Statistics for Black, Nonminority, and Hispanic Subgroups

| | Black (N=99) | | | Nonminority (N=332) | | |
|---|---|---|---|---|---|---|
| Variable | Mean | SD | Range | Mean | SD | Range |
| Aptitude G | 88.5 | 13.6 | 54-125 | 111.0 | 15.2 | 59-154 |
| Aptitude V | 93.4 | 11.7 | 72-129 | 111.1 | 14.0 | 66-149 |
| Aptitude N | 88.4 | 15.1 | 54-125 | 107.6 | 15.5 | 50-155 |
| Aptitude S | 92.6 | 17.5 | 55-150 | 109.6 | 17.5 | 55-156 |
| Aptitude P | 101.6 | 16.6 | 52-150 | 117.9 | 19.2 | 66-170 |
| Aptitude Q | 107.6 | 13.8 | 70-141 | 120.5 | 16.2 | 79-188 |
| Aptitude K | 109.0 | 18.8 | 62-144 | 113.6 | 14.9 | 64-159 |
| Aptitude F | 93.1 | 18.0 | 51-136 | 103.2 | 18.7 | 39-161 |
| Aptitude M | 103.5 | 19.5 | 45-168 | 110.6 | 18.2 | 65-169 |
| Criterion | 42.5 | 7.9 | 24-60 | 45.1 | 7.7 | 19-60 |
| Age | 32.1 | 8.5 | 20-58 | 28.3 | 7.4 | 19-64 |
| Education | 13.5 | 1.3 | 9-17 | 14.5 | 1.6 | 10-19 |
| Experience (Months on current job) | 54.6 | 45.5 | 4-196 | 33.2 | 31.9 | 1-180 |
| Total Experience (months) | 69.7 | 48.5 | 4-196 | 49.2 | 38.4 | 2-180 |

| | Hispanic (N=34) | | |
|---|---|---|---|
| Variable | Mean | SD | Range |
| Aptitude G | 102.4 | 15.8 | 75-153 |
| Aptitude V | 106.9 | 18.4 | 78-166 |
| Aptitude N | 98.9 | 13.9 | 71-131 |
| Aptitude S | 103.4 | 13.1 | 78-130 |
| Aptitude P | 106.7 | 18.1 | 69-144 |
| Aptitude Q | 112.3 | 14.4 | 90-151 |
| Aptitude K | 114.9 | 15.4 | 84-146 |
| Aptitude F | 98.9 | 18.6 | 60-147 |
| Aptitude M | 112.1 | 20.4 | 73-149 |
| Criterion | 43.7 | 7.4 | 30-57 |
| Age | 31.8 | 9.6 | 20-60 |
| Education | 13.9 | 1.9 | 9-17 |
| Experience (Months on current job) | 43.9 | 47.6 | 1-176 |
| Total Experience (months) | 56.1 | 49.6 | 3-176 |

## APPENDIX 2

### Descriptive Statistics for Male and Female Subgroups

| | Male (N=225) | | | Female (N=271) | | |
|---|---|---|---|---|---|---|
| Variable | Mean | SD | Range | Mean | SD | Range |
| Aptitude G | 107.9 | 17.0 | 59-154 | 103.7 | 17.8 | 54-153 |
| Aptitude V | 107.0 | 14.8 | 68-149 | 106.1 | 16.7 | 66-166 |
| Aptitude N | 104.2 | 17.5 | 50-155 | 102.1 | 17.0 | 54-140 |
| Aptitude S | 109.2 | 18.1 | 55-150 | 102.7 | 18.5 | 55-156 |
| Aptitude P | 112.0 | 18.6 | 56-162 | 115.4 | 20.7 | 52-174 |
| Aptitude Q | 115.3 | 15.3 | 72-162 | 118.4 | 17.6 | 70-188 |
| Aptitude K | 113.0 | 17.3 | 62-163 | 113.2 | 15.3 | 62-159 |
| Aptitude F | 98.2 | 19.0 | 39-157 | 103.1 | 19.1 | 51-161 |
| Aptitude M | 109.9 | 18.9 | 49-155 | 109.3 | 18.9 | 45-169 |
| Criterion | 44.6 | 7.7 | 21-60 | 44.0 | 8.0 | 19-60 |
| Age | 29.6 | 6.7 | 20-64 | 29.5 | 9.1 | 19-61 |
| Education | 14.6 | 1.7 | 9-19 | 14.0 | 1.6 | 9-19 |
| Experience (Months on current job) | 37.8 | 37.8 | 1-196 | 38.0 | 36.7 | 1-180 |
| Total Experience (months) | 55.6 | 43.8 | 2-196 | 50.9 | 40.6 | 2-183 |

APPENDIX 3

U.S. DEPARTMENT OF LABOR • MANPOWER ADMINISTRATION

## DESCRIPTIVE RATING SCALE

SCORE _____

RATING SCALE FOR _____

D.O.T. Title and Code

Directions: Please read the "Suggestions to Raters" and then fill in the items which follow. In making your ratings, only one box should be checked for each question.

### SUGGESTIONS TO RATERS

We are asking you to rate the job performance of the people who work for you. These ratings will serve as a "yardstick" against which we can compare the test scores in this study. The ratings must give a true picture of each worker or this study will have very little value. You should try to give the most accurate ratings possible for each worker.

These ratings are strictly confidential and won't affect your workers in any way. Neither the ratings nor test scores of any workers will be shown to anybody in your company. We are interested only in "testing the tests." Ratings are needed only for those workers who are in the test study.

Workers who have not completed their training period, or who have not been on the job or under your supervision long enough for you to know how well they can perform this work should not be rated. Please inform the test technician about this if you are asked to rate any such workers.

Complete the last question only if the worker is no longer on the job.

In making ratings, don't let general impressions or some outstanding trait affect your judgment. Try to forget your personal feelings about the worker. Rate only on the work performed. Here are some more points which might help you:

1. Please read all directions and the rating scale thoroughly before rating.

2. For each question compare your workers with "workers-in-general" in this job. That is, compare your workers with other workers on this job that you have known. This is very important in small plants where there are only a few workers. We want the ratings to be based on the same standard in all the plants.

3. A suggested method is to rate all workers on one question at a time. The questions ask about different abilities of the workers. A worker may be good in one ability and poor in another: for example, a very slow worker may be accurate. So rate all workers on the first question, then rate all workers on the second question, and so on.

4. Practice and experience usually improve a worker's skill. However, one worker with six months' experience may be a better worker than another with six years' experience. Don't rate one worker as poorer than another merely because of a lesser amount of experience.

5. Rate the workers according to the work they have done over a period of several weeks or months. Don't rate just on the basis of one "good" day, or one "bad" day or some single incident. Think in terms of each worker's usual or typical performance.

6. Rate only the abilities listed on the rating sheet. Do not let factors such as cooperativeness, ability to get along with others, promptness and honesty influence your ratings. Although these aspects of a worker are important, they are of no value for this study as a "yardstick" against which to compare aptitude test scores.

MA 7-66
Apr. 1973

NAME OF WORKER (Print) (Last) (First)

SEX: MALE_____ FEMALE_____

Company Job Title: _____

How often do you see this worker in a work situation?

- ☐ All the time.
- ☐ Several times a day.
- ☐ Several times a week.
- ☐ Seldom.

How long have you worked with this worker?

- ☐ Under one month.
- ☐ One to two months.
- ☐ Three to five months.
- ☐ Six months or more.

A. How much can this worker get done? (Worker's ability to make efficient use of time and to work at high speed.) (If it is possible to rate only the quantity of work which a person can do on this job as adequate or inadequate, use #2 to indicate "inadequate" and #4 to indicate "adequate.")

- ☐ 1. Capable of very low work output. Can perform only at an unsatisfactory pace.
- ☐ 2. Capable of low work output. Can perform at a slow pace.
- ☐ 3. Capable of fair work output. Can perform at an acceptable pace.
- ☐ 4. Capable of high work output. Can perform at a fast pace.
- ☐ 5. Capable of very high work output. Can perform at an unusually fast pace.

B. How good is the quality of work? (Worker's ability to do high-grade work which meets quality standards.)

- ☐ 1. Performance is inferior and almost never meets minimum quality standards.
- ☐ 2. Performance is usually acceptable but somewhat inferior in quality.
- ☐ 3. Performance is acceptable but usually not superior in quality.
- ☐ 4. Performance is usually superior in quality.
- ☐ 5. Performance is almost always of the highest quality.

C. How accurate is the work? (Worker's ability to avoid making mistakes.)

- ☐ 1. Makes very many mistakes. Work needs constant checking.
- ☐ 2. Makes frequent mistakes. Work needs more checking than is desirable.
- ☐ 3. Makes mistakes occasionally. Work needs only normal checking.
- ☐ 4. Makes few mistakes. Work seldom needs checking.
- ☐ 5. Rarely makes a mistake. Work almost never needs checking.

MA 7-66
Apr. 1973

D. How much does the worker know about the job? (Worker's understanding of the principles, equipment, materials and methods that have to do directly or indirectly with the work.)

- ☐ 1. Has very limited knowledge. Does not know enough to do the job adequately.
- ☐ 2. Has little knowledge. Knows enough to get by.
- ☐ 3. Has moderate amount of knowledge. Knows enough to do fair work.
- ☐ 4. Has broad knowledge. Knows enough to do good work.
- ☐ 5. Has complete knowledge. Knows the job thoroughly.

E. How large a variety of job duties can the worker perform efficiently? (Worker's ability to handle several different operations.)

- ☐ 1. Cannot perform different operations adequately.
- ☐ 2. Can perform a limited number of different operations efficiently.
- ☐ 3. Can perform several different operations with reasonable efficiency.
- ☐ 4. Can perform many different operations efficiently.
- ☐ 5. Can perform an unusually large variety of different operations efficiently.

F. Considering all the factors already rated, and only these factors, how good is this worker? (Worker's all-around ability to do the job.)

- ☐ 1. Performance usually not acceptable.
- ☐ 2. Performance somewhat inferior.
- ☐ 3. A fairly proficient worker.
- ☐ 4. Performance usually superior.
- ☐ 5. An unusually competent worker.

Complete the following ONLY if the worker is no longer on the job.

G. What do you think is the reason this person left the job? (It is not necessary to show the official reason if you feel that there is another reason, as this form will not be shown to anybody in the company.)

- ☐ 1. Fired because of inability to do the job.
- ☐ 2. Quit, and I feel that it was because of difficulty doing the job.
- ☐ 3. Fired or laid off for reasons other than ability to do the job (i.e., absenteeism, reduction in force).
- ☐ 4. Quit, and I feel the reason for quitting was not related to ability to do the job.
- ☐ 5. Quit or was promoted or reassigned because the worker had learned the job well and wanted to advance.

| RATED BY | TITLE | DATE |
|---|---|---|
| | | |
| COMPANY OR ORGANIZATION | LOCATION (*City, State, ZIP Code*) | |
| | | |

GPO 863-716

MA 7-66
Apr. 1973

APPENDIX 4

JOB DESCRIPTION

Job Title

Respiratory Therapist (medical ser.) 079.361-010 4th Edition DOT code.

Guide for Occupational Exploration (GOE) Code, 10.02.02 Therapy and Rehabilitation.

Job Summary

Makes daily rounds to deliver and check equipment, administer various types of respiratory therapy to patients using appropriate medication and/or equipment, and records necessary patient information for records.

Work Performed

Record Keeping - Records all information pertaining to respiratory therapy on patients, i.e. patient's name, location, status, type of therapy, diagnosis, amount of apparatus time used, doctor, time and date. Maintains daily statistical records pertaining to Respiratory Therapy department.

*Therapy - Checks doctor's orders in order book to determine daily round of patients to be seen and type of therapy to be used for each. Explains and demonstrates therapeutic procedures to patients in order to calm patients and gain their confidence. Manipulates controls on the following machines to administer the proper therapy - various respirators, heated nebulizer, nebulizer, resuscitator, oxygen tent and masks, croupette, nasal catheter and cannula. Uses this equipment to administer the following types of therapy as prescribed by doctor; intermittent positive pressure breathing, oxygen, humidity/aerosol, cardiopulmonary resuscitation, pulmonary, percussion and postural draining, arterial blood gas analysis, and drug administration. May do additional types of therapy such as sputum inductions and gas therapy. Observes patient closely for side effects of medication. Discontinues treatment after prescribed time or medication is gone. May determine if patients will be able to take their own treatments. If so, thoroughly instructs patient on correct procedures.

Equipment - Carries or pushes apparatus to designated patient's bedside. Assembles equipment and makes sure that it is in good working condition. May remove equipment not being used and return it to therapy department. Repairs, cleans and sterilizes equipment according to correct procedures and stores it in its proper place.

Other - Attends meetings and lectures, takes phone calls, and keeps updated on current literature. Does other related duties as assigned.

- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -

*These job duties were designated as critical job duties because they must be performed competently if the job is to be performed in a satisfactory manner. Respiratory Therapists spend about 72% of their working time performing these duties.